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Reviews of Recent Foreign Literature.

A Handbook of Cryptogamic Botany. By Alfred W. Bennett and George Murray. 8vo, pp. 473, 378 illustrations. London and New York: Longmans, Green & Co., 1889. Price, $5.00.

Students of botany, of whatever line of research, have long felt the need of a volume wherein could be found accurately and concisely stated the known facts concerning the structure, affinities and life history of the lower members of the vegetable kingdom. The need of such a work has, indeed, proved an obstacle in the way of their investigation and study, so that the great majority of botanists are almost entirely ignorant of all but the most general and apparent characteristics of this great portion of the world of plants. The literature of the subject is so vast as to be within the reach of but few, and but fewer have the time or the inclination to devote to this branch of knowledge. It has therefore come to be in the possession of a few specialists who write mainly of their specialties for others of their ilk, and but rarely for the world at large.

The bringing together of this widely scattered and highly specialized information and its correlation into an orderly series has been the work of Messrs. Bennett and Murray, and they have done it well. The senior author has elaborated the chlorophyll-bearing groups, and the junior has written of those in which that substance is wanting. The classification adopted is made the subject of a portion of the Introduction. The Pteridophyta and Bryophyta are taken on the generally recognized lines, excepting that the Sphagnaceæ are not separated as a class, although the authors are not strenuous in the opinion that they form but an order of Musci. But the treatment of the Thallophyta is very different from what we have recently had, with the exception noted in our last issue. The Characeæ are held to be a distinct class, and are put between the Musci and the higher Algæ. The Thallophyta are then treated as (1) Algæ and (2) Fungi. The Algæ are grouped according to Professor Bennett's recent paper in the Journal of the Linnæan Society, the Fungi follow the arrangement of DeBary, and the Lichens are allowed to come within the definition of Fungi and are treated among the several divisions of that class. While no one is perhaps at the present time seriously questioning the algo-fungal hypothesis, the wisdom of splitting up a great natural group may very properly be doubted. We believe that the plants will long be studied as Lichens, whatever may be their nature and origin.

The term Protophyta is retained for the lowest plants as a matter "of convenience rather than of principle," and they are considered under the headings Schizophyceæ and Schizomycetes; the first includes, besides Protococcoideæ and Cyanophyceæ, the Diatomaceæ, here removed from their relationship to the Desmids in the class Conjugatæ, on the plea that their method of reproduction is not sexual, in which position we presume Prof. Bennett will not find universal agreement.

The terminology is considerably revised, and a number of new terms added. The word "reproduction" is restricted to a process resulting in the formation of one or more new individuals, all cases of non-sexual multiplication being described as "propagation"; similarly, bodies which are the direct result of sexual impregnation are termed "sperm," as distinguished from "spore," which term is restricted to cells for vegetative propagation, and words in which these syllables occur are made to correspond. The book is thoroughly illustrated, clearly written, and has interspersed abundant references to the most important literature. Botanists should be grateful to its distinguished authors for their great contribution to our pleasure and profit. N. L. B.

Lichenes Novæ Zelandiæ.

Dr. Nylander of Paris has recently published a work with the above title (Paris: Paul Schmidt, pp. 151, 1888) giving 371 species, which is the fullest account of New Zealand lichens yet issued. Added are some corrections and additions to his "Lichens of Fuegia and Patagonia." A few points are of interest to American lichenologists.

On page 58 is described a new *Placodium, P. constipens;* thallus fruticulose-cæspitose, orange colored, erect, the laciniæ flat; apothecia terminal, of the same color; spores oblong, simple, .010-14x.0045-65 mm. Farallone Islands, San Francisco.

A sterile plant in the collections of the Hassler Expedition, called by Tuckerman, "*Alectoria*, perhaps a new species," is said to be *Cetraria epiphorella*, Nyl. Lich. Fueg. p. 20, but according to Müller in "Lichenes Spegazziniani" (Nuovo Giornale Bot. Ital., Jan. 1889) this is *C. aculeata* var. *gracilenta*, Krempelh. Exot. Flechten, p. 315 (1868).

The name *Erioderma velligerum*, Tuck. Syn. ii. 143, is changed on grammatical grounds to *E. vellerigerum*. *Pertusaria colobina*, Tuck. l. c. 149, hardly differs from *P. cucurbitula*. *Opegrapha robustula* is a new species from Chili. *O. atra*, Pers., from the Straits of Magellan; *Arthonia subdispersula*, with the preceding.

Buellia Catawbensis, Willey, which had been called by Nylander a *Dermatiscum* and had a place among the Lecanorei next to *Rinodina*, is here restored to its original place in the *Lecidei*.

H. W.

Contributions towards a Flora of Caithness. By J. F. Grant and Arthur Bennett. (Pamph. 8 vo., pp. 41; Perth, 1889; reprinted from the "Scottish Naturalist.)"

This is a record of plant stations in the most northern country of the mainland of Scotland, made up from observations and collections by the authors as well as by numerous other botanists. A feature of the catalogue is the entire omission of authors' names after the species.

Index to Recent American Botanical Literature.

Aerating Organs on the Roots of Swamp and other Plants. Wm. P. Wilson (Proc. Phil. Acad. Nat. Sci., April 2; reprinted, pp. 3.)

From extended studies of the "knees" of the Bald Cypress (*Taxodium distichum*) Professor Wilson concludes that they serve as structures to aerate the subaqueous and subterranean portions of the tree. He states that when cultivated in dryer soils it never forms the knees. Among other plants mentioned which produce similar structures he records Indian Corn (*Zea Mays*), the Pond Pine of the South (*Pinus serotina*), the Water Tupelo (*Nyssa aquatica*) and the Mangrove (*Avicennia nitida*).

Algen aus Feuerland und Patagonia. J. B. DeToni (Hedwigia,